

From the viewpoint of residues, could currently used pesticides from “contaminated sites” of agricultural soils release into the water?

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Currently used pesticides (CUPs) used in agriculture and their transformation products have been found at high frequency and at considerable concentrations in monitoring of surface and groundwater repeatedly. But data for pesticides in soils are not available, although soils can be expected to be a source of pesticides for water contamination. The monitoring of CUPs in Czech agricultural soils was performed in 2015, not only for the purpose above, but also for the post-registration control of approved plant protection products. Seventy active ingredients and 21 transformation products were determined by multiple residue method using QuEChERS extraction and UPLC-MS/MS detection in 75 soils. Several CUPs were found above LOQ frequently: among the most frequently belong azole fungicides: epoxiconazole (36% of samples), tebuconazole (27%), flusilazole (17%), prochloraz (16%), and propiconazole (10%). Their mean concentrations were about 0.01 mg/kg (i.e. Czech limit for pesticides in agricultural soils) in positive samples. The 2-hydroxy atrazine was the second most frequently detected compound (29%) with mean concentration about 0.03 mg/kg in positive samples and the highest measured concentration of 0.135 mg/kg. Other CUPs with frequent findings were simazine-2-hydroxy (44%), terbuthylazine-hydroxy (83%) and others. The results also show that residues of CUPs are present as the mixture in current agricultural soils - half of the soils had 5 or more CUPs detected. The soil residues of CUPs should be definitely considered and soil monitoring programs for CUPs should be initiated in EU countries along with water monitoring. Financial support was obtained from GACR project 15-20065S.